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Gasoline Reid Vapor Pressure

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Overview:

Volatility is the property of a liquid fuel that defines its evaporation characteristics. RVP is an abbreviation for "Reid vapor pressure," a common measure of and generic term for gasoline volatility. EPA regulates the vapor pressure of gasoline sold at retail stations during the summer ozone season (June 1 to September 15) to reduce evaporative emissions from gasoline that contribute to ground-level ozone and diminish the effects of ozone-related health problems.

EPA established a two-phase reduction in summertime commercial gasoline volatility. These rules reduce gasoline emissions of volatile organic compounds (VOC) that are a major contributor to ground-level ozone (smog). Phase I was applicable to calendar years 1989 through 1991. Depending on the state and month, gasoline RVP was not to exceed 10.5 pounds per square inch (psi), 9.5 psi, or 9.0 psi. Phase II is applicable to 1992 and later calendar years.

Depending on the state and month, gasoline RVP may not exceed 9.0 psi or 7.8 psi. EPA provides a 1.0 psi RVP allowance for gasoline containing ethanol at 9 to 10 volume percent. In order to relax the applicable federal RVP standard in an area where the more stringent federal RVP of 7.8 psi is required, an area must be designated as (or redesignated to) an attainment area. The area must also submit a maintenance plan demonstrating continued attainment of the ozone NAAQS with the less stringent RVP standard in place.

EPA has approved relaxation of the summer gasoline RVP standards for a number of states and areas, including:

Grant Parish, Louisiana;
Miami, Tampa and Jacksonville, Florida;
Raleigh-Durham-Chapel Hill, Greensboro, Winston-Salem, High Point and Charlotte, North Carolina;
Birmingham, Alabama; and
Nashville (Middle Tennessee Area).

Learn more about the [RVP federal regulations](#).

[Enforcement of gasoline volatility questions and answers.](#)

Detailed Information:

The 1990 Clean Air Act (CAA) Amendments added a new section, 211(h), that prohibited the EPA from establishing a volatility standard more stringent than 9.0 pounds per square inch (psi) in an ozone attainment area, except that the EPA may impose a lower (i.e., more stringent) standard in any former ozone nonattainment area that has been redesignated to attainment.

In response to the 1990 CAA Amendments, the EPA amended the volatility regulations at 40 CFR 80.27. The EPA set the Reid Vapor Pressure (RVP) standard at 9.0 psi for designated volatility attainment areas (40 CFR 80.27(a)(2)(i)) and the RVP standard at 7.8 psi for certain designated volatility nonattainment areas (40 CFR 80.27(a)(2)(ii)). A designated volatility nonattainment area is an area that is designated as being nonattainment for the ozone National Ambient Air Quality Standard (NAAQS) pursuant to a rulemaking under CAA section 107(d)(4)(A)(ii), and a designated volatility attainment area is an area not designated as being in nonattainment with the NAAQS for ozone. (40 CFR 80.2(cc) and 80.2(dd), respectively).

Designations and exact boundaries of the ozone nonattainment areas subject to the 7.8 psi RVP standard were published in the November 6, 1991, notice that designated areas pursuant to CAA section 107(d)(4)(A)(ii). See Air Quality Designations and Classifications; 56 Fed. Reg. 56,694 (Nov. 6, 1991) (codified at 40 CFR part 81).

The EPA also set the RVP standard at 7.8 psi for the 1997 ozone nonattainment area in Colorado that was designated as nonattainment for ozone in an April 30, 2004, notice designating areas pursuant to CAA section 107(d)(1). See Air Quality Designations and Classifications for the 8-Hour Ozone National Ambient Air Quality Standards; Early Action Compact Areas With Deferred Effective Dates, 69 Fed. Reg. 23858 (August 30, 2004) (codified at 40 CFR part 81).

Accordingly, the 7.8 psi standard set forth in the state-by-state RVP Table at 40 CFR 80.27(a)(2)(ii) applies to the nonattainment areas identified in the ozone NAAQS designation and classifications at 56 Fed. Reg. 56,694, which was codified at 40 CFR part 81 in November 1991, and the Colorado nonattainment area identified in the ozone NAAQS designation and classifications at 69 Fed. Reg. 23858, which was codified at 40 CFR part 81 in August 2004. The 9.0 psi standard applies to conventional gasoline in all other areas of the lower 48 states not covered by either the 7.8 psi federal volatility requirement or an EPA-approved state implementation plan (SIP) fuel, as denoted in the table below.

For this reference guide, RVP limits are listed by county, which may not coincide precisely with the borders of a nonattainment or attainment area. For specific information regarding borders, please review the ozone NAAQS designation and classifications notices identified above. Additionally, consult the respective EPA regional office regarding the boundaries of any federally-approved SIP with more stringent RVP standards.

RVP limits are listed where 1) the EPA has approved a request from a state to relax the RVP standard from 7.8 psi to 9.0 psi; and 2) a state has received a waiver under CAA section 211(c)(4)(C) to adopt into its federally-approved SIP a state fuel program that is more stringent than federal requirements. Not listed are locations where voluntary agreements allow for supply of lower RVP fuel than what is otherwise required for an area.

Below is a summary of the federal fuel volatility regulations at 40 CFR 80.27:

- For all regulated parties except retailers and wholesale purchaser-consumers, maximum standards generally take effect May 1.
- Standards for June 1 to September 15 are maximum standards for all regulated parties including retailers and wholesale purchaser-consumers, unless the state has an extended summer ozone season as part of the federally-approved SIP (e.g., Arizona, Eastern Texas).
- Gasoline alcohol blends meeting requirements of 40 CFR 80.27(d) have 1.0 psi waiver of applicable RVP standard unless:
 1. The state has adopted and enforces a SIP-approved RVP standard that does not provide for the 1.0 psi waiver (e.g., Maine, New York, Pennsylvania, Texas and Vermont);
 2. The state has received the EPA's approval to opt-out of the 1.0 psi waiver provision per section 1501(c) of the Energy Policy Act of 2005 [CAA section 211(h)(5), as amended]; or
 3. The state uses reformulated gasoline (RFG), which has a more stringent VOC performance standard. Additional information about RFG can be found at <https://www.epa.gov/gasoline-standards/reformulated-gasoline>.
- Alaska, Hawaii, and U.S. territories are exempted from federal volatility regulations.

The table below provides the guide for state summer RVP standards.

State-by-State RVP Table

State	County/ Parish	City	Month & RVP PSI Max				
			May	June	July	August	Sept 1-15
AL	All counties ^I		9.0	9.0	9.0	9.0	9.0
AR	All counties		9.0	9.0	9.0	9.0	9.0
AZ	Maricopa (part)	Phoenix	9.0	7.0 ^A	7.0	7.0	7.0 (Sept. 30)
AZ	All others		9.0	9.0	9.0	9.0	9.0
CA	(See EPA RFG list) ^B						

State	County/ Parish	City	Month & RVP PSI Max				
CA	All counties implement a version of the California Reformulated Gasoline Program, which enforces RVP standards more stringent than the federal requirements. Standards and compliance periods vary by air basin; please refer to the California Air Resources Board website for additional details: https://www.arb.ca.gov/fuels/fuels.htm EXIT						
CO	Adams		9.0	7.8	7.8	7.8	7.8
CO	Arapahoe		9.0	7.8	7.8	7.8	7.8
CO	Boulder	Boulder	9.0	7.8	7.8	7.8	7.8
CO	Broomfield		9.0	7.8	7.8	7.8	7.8
CO	Denver	Denver	9.0	7.8	7.8	7.8	7.8
CO	Douglas		9.0	7.8	7.8	7.8	7.8
CO	Jefferson		9.0	7.8	7.8	7.8	7.8
CO	Larimer (part)		9.0	7.8	7.8	7.8	7.8
CO	Weld (part)		9.0	7.8	7.8	7.8	7.8
CO	All Others		9.0	9.0	9.0	9.0	9.0
CT	(See EPA RFG list) ^B						
DC	(See EPA RFG list) ^B						
DE	(See EPA RFG list) ^B						
FL	All counties ^G		9.0	9.0	9.0	9.0	9.0
GA	Cherokee ^J		9.0	7.8	7.8	7.8	7.8
GA	Clayton ^J		9.0	7.8	7.8	7.8	7.8

State	County/ Parish	City	Month & RVP PSI Max				
GA	Cobb ^J		9.0	7.8	7.8	7.8	7.8
GA	Coweta ^J		9.0	7.8	7.8	7.8	7.8
GA	DeKalb ^J		9.0	7.8	7.8	7.8	7.8
GA	Douglas ^J		9.0	7.8	7.8	7.8	7.8
GA	Fayette ^J		9.0	7.8	7.8	7.8	7.8
GA	Forsyth ^J		9.0	7.8	7.8	7.8	7.8
GA	Fulton ^J	Atlanta	9.0	7.8	7.8	7.8	7.8
GA	Gwinnett ^J		9.0	7.8	7.8	7.8	7.8
GA	Henry ^J		9.0	7.8	7.8	7.8	7.8
GA	Paulding ^J		9.0	7.8	7.8	7.8	7.8
GA	Rockdale ^J		9.0	7.8	7.8	7.8	7.8
GA	All others		9.0	9.0	9.0	9.0	9.0
ID	All counties		9.0	9.0	9.0	9.0	9.0
IL	All other conventional gasoline counties		9.0	9.0	9.0	9.0	9.0
IL	(See EPA RFG list) ^B						
IN	Clark		7.8 ^A	7.8	7.8	7.8	7.8
IN	Floyd		7.8 ^A	7.8	7.8	7.8	7.8

State	County/ Parish	City	Month & RVP PSI Max				
IN	All other conventional gasoline counties		9.0	9.0	9.0	9.0	9.0
IN	(See EPA RFG list) ^B						
IA	All counties		9.0	9.0	9.0	9.0	9.0
KS	Johnson		9.0	7.0 ^A	7.0	7.0	7.0
KS	Wyandotte	Kansas City	9.0	7.0 ^A	7.0	7.0	7.0
KS	All Others		9.0	9.0	9.0	9.0	9.0
KY	All conventional gasoline counties		9.0	9.0	9.0	9.0	9.0
KY	(See EPA RFG list) ^B						
LA	Ascension		9.0	7.8	7.8	7.8	7.8
LA	Beauregard		9.0	7.8	7.8	7.8	7.8
LA	Calcasieu	Lake Charles	9.0	7.8	7.8	7.8	7.8
LA	E Baton Rouge	Baton Rouge	9.0	7.8	7.8	7.8	7.8
LA	Iberville		9.0	7.8	7.8	7.8	7.8
LA	Jefferson		9.0	7.8	7.8	7.8	7.8
LA	Lafayette		9.0	7.8	7.8	7.8	7.8
LA	Lafourche		9.0	7.8	7.8	7.8	7.8

State	County/ Parish	City	Month & RVP PSI Max				
LA	Livingston		9.0	7.8	7.8	7.8	7.8
LA	Orleans	New Orleans	9.0	7.8	7.8	7.8	7.8
LA	Pointe Coupee		9.0	7.8	7.8	7.8	7.8
LA	St Bernard		9.0	7.8	7.8	7.8	7.8
LA	St Charles		9.0	7.8	7.8	7.8	7.8
LA	St James		9.0	7.8	7.8	7.8	7.8
LA	St Mary		9.0	7.8	7.8	7.8	7.8
LA	W Baton Rouge		9.0	7.8	7.8	7.8	7.8
LA	All others		9.0	9.0	9.0	9.0	9.0
MA	(See EPA RFG list) ^B						
MD	All conventional gasoline counties		9.0	9.0	9.0	9.0	9.0
MD	(See EPA RFG list) ^B						
ME	All others		9.0 ^E	9.0	9.0	9.0	9.0
ME	(See EPA RFG list) ^B						
MI	Lenawee		9.0	7.0 ^A	7.0	7.0	7.0
MI	Livingston		9.0	7.0 ^A	7.0	7.0	7.0

State	County/ Parish	City	Month & RVP PSI Max				
MI	Macomb		9.0	7.0 ^A	7.0	7.0	7.0
MI	Monroe		9.0	7.0 ^A	7.0	7.0	7.0
MI	Oakland		9.0	7.0 ^A	7.0	7.0	7.0
MI	St. Clair		9.0	7.0 ^A	7.0	7.0	7.0
MI	Washtenaw	Ann Arbor	9.0	7.0 ^A	7.0	7.0	7.0
MI	Wayne	Detroit	9.0	7.0 ^A	7.0	7.0	7.0
MI	All others		9.0	9.0	9.0	9.0	9.0
MN	All counties		9.0	9.0	9.0	9.0	9.0
MT	All counties		9.0	9.0	9.0	9.0	9.0
MO	Clay		9.0	7.0 ^A	7.0	7.0	7.0
MO	Jackson	Kansas City	9.0	7.0 ^A	7.0	7.0	7.0
MO	Platte		9.0	7.0 ^A	7.0	7.0	7.0
MO	All other conventional gasoline counties		9.0	9.0	9.0	9.0	9.0
MO	(See EPA RFG list) ^B						
MS	All counties		9.0	9.0	9.0	9.0	9.0
NC	All counties ^G		9.0	9.0	9.0	9.0	9.0
NE	All counties		9.0	9.0	9.0	9.0	9.0

State	County/ Parish	City	Month & RVP PSI Max				
NH	All conventional gasoline counties		9.0	9.0	9.0	9.0	9.0
NH	(See EPA RFG list) ^B						
NJ	(See EPA RFG list) ^B						
NM	All counties		9.0	9.0	9.0	9.0	9.0
ND	All counties		9.0	9.0	9.0	9.0	9.0
NV	Washoe	Reno	9.0	7.8	7.8	7.8	7.8
NV	All others		9.0	9.0	9.0	9.0	9.0
NY	All conventional gasoline counties		9.0 ^{A,E}	9.0	9.0	9.0	9.0
NY	(See EPA RFG list) ^B						
OH	All Counties ^K		9.0	9.0	9.0	9.0	9.0
OK	All Counties		9.0	9.0	9.0	9.0	9.0
OR	Clackamas		9.0	7.8	7.8	7.8	7.8
OR	Multnomah	Portland	9.0	7.8	7.8	7.8	7.8
OR	Washington		9.0	7.8	7.8	7.8	7.8
OR	Marion (part)	Salem	9.0	7.8	7.8	7.8	7.8
OR	Polk (part)		9.0	7.8	7.8	7.8	7.8
OR	All others		9.0	9.0	9.0	9.0	9.0

State	County/ Parish	City	Month & RVP PSI Max				
PA	Allegheny	Pittsburgh	7.8 ^{A,E}	7.8	7.8	7.8	7.8
PA	Armstrong		7.8 ^{A,E}	7.8	7.8	7.8	7.8
PA	Beaver		7.8 ^{A,E}	7.8	7.8	7.8	7.8
PA	Butler		7.8 ^{A,E}	7.8	7.8	7.8	7.8
PA	Fayette		7.8 ^{A,E}	7.8	7.8	7.8	7.8
PA	Washington		7.8 ^{A,E}	7.8	7.8	7.8	7.8
PA	Westmoreland		7.8 ^{A,E}	7.8	7.8	7.8	7.8
PA	All other conventional gasoline counties		9.0	9.0	9.0	9.0	9.0
PA	(See EPA RFG list) ^B						
RI	(See EPA RFG list) ^B						
SC	All counties		9.0	9.0	9.0	9.0	9.0
SD	All counties		9.0	9.0	9.0	9.0	9.0
TN	Shelby	Memphis	9.0	7.8	7.8	7.8	7.8
TN	All Others ^L		9.0	9.0	9.0	9.0	9.0
TX	See Footnote ^F for list of 95 counties affected	Eastern Texas	7.8 ^{A,E}	7.8	7.8	7.8	7.8 (Oct 1)
TX	El Paso	El Paso	7.0 ^{A,E}	7.0	7.0	7.0	7.0

State	County/ Parish	City	Month & RVP PSI Max				
TX	Hardin		9.0	7.8	7.8	7.8	7.8
TX	Jefferson	Beaumont	9.0	7.8	7.8	7.8	7.8
TX	Orange		9.0	7.8	7.8	7.8	7.8
TX	All other conventional gasoline counties		9.0	9.0	9.0	9.0	9.0
TX	(See EPA RFG List) ^B						
UT	Davis		9.0	7.8	7.8	7.8	7.8
UT	Salt Lake	Salt Lake City	9.0	7.8	7.8	7.8	7.8
UT	All others		9.0	9.0	9.0	9.0	9.0
VA	All conventional gasoline counties		9.0	9.0	9.0	9.0	9.0
VA	(See EPA RFG List) ^B						
VT	All counties		9.0 ^E	9.0	9.0	9.0	9.0
WA	All counties		9.0	9.0	9.0	9.0	9.0
WV	All counties		9.0	9.0	9.0	9.0	9.0
WI	All conventional gasoline counties		9.0	9.0	9.0	9.0	9.0
WI	(See EPA RFG List) ^B						

State	County/ Parish	City	Month & RVP PSI Max				
WY	All counties		9.0	9.0	9.0	9.0	9.0

Notes to Federal and State RVP Standards

A State has received a waiver under Clean Air Act 211(c)(4)(C) to adopt a state fuel program, more stringent than federal requirements, into the federally-approved State Implementation Plan (SIP). State fuel program may also define a volatility level and compliance date for refiners and/or terminals different than the compliance date for retailers. Potentially affected parties should refer to the SIP or contact the State for more information about proper compliance.

B Indicates there are counties or areas in counties in the state which have reformulated gasoline (RFG) requirements. A list of RFG areas can be found at <http://www.epa.gov/gasoline-standards/reformulated-gasoline>. RFG areas must meet a VOC emissions performance reduction standard per 40 CFR 80.41.

C Reserved.

D Reserved.

E State fuel program in federally-approved SIP does not provide for use of a 1.0 psi ethanol waiver under 40 CFR 80.27(d). The 1.0 psi ethanol waiver is not applicable during the entire volatility control period defined in the SIP (e.g. May 1 - September 15).

F TX - Eastern Texas counties include: Anderson, Angelina, Aransas, Atascosa, Austin, Bastrop, Bee, Bell, Bexar, Bosque, Bowie, Brazos, Burleson, Caldwell, Calhoun, Camp, Cass, Cherokee, Colorado, Comal, Cooke, Coryell, De Witt, Delta, Ellis, Falls, Fannin, Fayette, Franklin, Freestone, Goliad, Gonzales, Grayson, Gregg, Grimes, Guadalupe, Harrison, Hays, Henderson, Hill, Hood, Hopkins, Houston, Hunt, Jackson, Jasper, Johnson, Karnes, Kaufman, Lamar, Lavaca, Lee, Leon, Limestone, Live Oak, Madison, Marion, Matagorda, McLennan, Milam, Morris, Nacogdoches, Navarro, Newton, Nueces, Panola, Parker, Polk, Rains, Red River, Refugio, Robertson, Rockwall, Rusk, Sabine, San Jacinto, San Patricio, San Augustine, Shelby, Smith, Somervell, Titus, Travis, Trinity, Tyler, Upshur, Van Zandt, Victoria, Walker, Washington, Wharton, Williamson, Wilson, Wise, and Wood.

G EPA issued a final rule on May 22, 2014 (79 FR 29362) that relaxed the 7.8 psi federal RVP requirement in Davidson, Davie, Durham, Forsyth, Granville, Guilford and Wake Counties in North Carolina and Broward, Dade, Duval, Hillsborough, Palm Beach and Pinellas Counties in Florida. The rule is effective on May 30, 2014. The EPA issued a direct final rule on August 17, 2015 (80 FR 49164) that relaxed the 7.8 psi federal RVP requirement in Mecklenburg and Gaston counties. As of October 16, 2015, no North Carolina counties are subject to the 7.8 psi federal volatility requirement.

H Reserved.